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ABSTRACT

Within the framework of the social stress and behavioral theories of depression, this study investigated the hypothesis that postpartum depression is a function of disruption of parents' prepartum functioning by the subsequent demands of infant caretaking. Seventy-eight primiparous married couples (N=156, 78 men and 78 women) volunteered to complete questionnaires at 8 weeks prepartum and 8 weeks postpartum assessing indicators of stress due to child care. The results indicated that when the level of prepartum depression was controlled, the amount of positive reinforcement reported experienced was significantly related to postpartum depression for women. For men, the degree to which their infant's behavior was viewed as better than the average baby was significantly related to postpartum depression. It was concluded that the findings supported a behavioral theory interpretation of postpartum depression. Implications for future research are discussed. (Author/MP)

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Postpartum Adjustment in Primiparous Parents

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[1] This study is based on the doctoral dissertation submitted by the first author to Wayne State University under the supervision of the second author. A version of this paper was presented at the Society for Research in Child Development Biannual Meeting, April 3, 1981, Boston, Massachusetts.

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Running Head: Postpartum Depression

Abstract

Within the framework of the social stress and behavioral theories of depression, this study investigated the hypothesis that postpartum depression is a function of disruption of parents' prepartum functioning by the subsequent demands of infant caretaking. Seventy-eight primiparous middle SES married couples (N=156, 78 men and 78 women) volunteered to complete questionnaires at eight weeks prepartum and eight weeks postpartum assessing indicators of stress due to childcare. The results indicated that when the level of prepartum depression was controlled, the amount of positive reinforcement reported experienced was significantly related to postpartum depression for women. For men, the degree to which their infant's behavior was viewed as better than the average baby was significantly related to postpartum depression. It was concluded that the findings supported a behavioral theory interpretation of postpartum depression. Implications for future research are discussed.

Postpartum Adjustment in Primiparous Parents

Researchers who propose a social stress theory of postpartum depression conceptualize childbirth and the introduction of the infant to the home as an "acute social event," a major stressor which disrupts the parents' patterns of living and requires them to quickly implement new behavior patterns in the postpartum period (Gordon, Kapostins, & Gordon, 1965). According to a number of investigators (Gordon et al., 1965; Shereshefsy & Yarrow, 1973; Yalom, Lunde, & Hamberg, 1968), such a disruption during the postpartum period increases the woman's vulnerability to emotional disturbance.

This conceptualization of childbirth and the postpartum period as a major stressor concurs with Appley and Trumbell's (1967) definition of stress as any condition of disturbance of normal functioning in which the individual has an extra load to handle. When the extra load is excessive and the disturbance in functioning cannot be corrected, the individual may respond with disordered behavior, such as anxiety, depression, panic, etc.

According to social stress theorists, the greater the degree of stress experienced, the greater the disturbance in functioning and hence, the greater the likelihood of disordered behavior. Social stress theory suggests that postpartum disturbance is a function of how much old behavior patterns are disrupted by the new demands of infant caretaking. This theory posits that external factors, such as the demands of childcare, rather than internal or physiological variables are the primary determinants of postpartum disturbances or depression in most women. Supporting this social stress theory of postpartum disturbance, research has often failed to find significant relations between physiological variables and postpartum

depression. Also, adoptive mothers (Melges, 1968) and fathers (Bittman & Zalk, 1978; Blaker, 1974; Rees & Lutkins, 1971) report depression following adoption.

In addition, the type of stress experienced postpartum is the same type which many theorists and researchers believe precipitates depression (Friedman & Katz, 1974). According to the behavioral theory of depression, a stress which involves a large and sudden change in the environment (as occurs postpartum) may produce a loss of behavior and subsequently a loss of positive reinforcement. Reduction in positive reinforcement is assumed to be a critical antecedent for the occurrence of depression (Lewinsohn, 1974; Lewinsohn & Amenson, 1978; Lewinsohn & Libet, 1972; Ferster, 1973).

In accord with the social stress and behavioral theories of depression, the greater the disruption experienced postpartum due to caretaking demands, the greater the disturbance of prepartum patterns of functioning and hence, the greater the likelihood of postpartum depression. Utilizing this theoretical framework, this research project proposed to test the hypothesis that postpartum depression is a function of the disruption experienced by the parent postpartum due to the demands of infant caretaking.

If the degree of disruption experienced postpartum due to the demands of childcare is a primary determinant of postpartum depression, there should be a significant relationship between the degree of this disruption experienced and postpartum depression for both mothers and fathers. Thus, this study evaluated primiparous couples' in experience of disruption related to the new demands of childcare and the degree to which they experienced depression postpartum.

The degree of disruption experienced due to childcare demands was

assessed in terms of: (a) the amount of time reported spent in infant caretaking postpartum, (b) the adaptiveness of parents' attitudes toward caretaking, (c) the extent to which the parent viewed the infant's behavior as problematic or bothersome, (d) the frequency of positive reinforcement experienced postpartum and the change in positive reinforcement frequency occurring from prepartum to postpartum, and (e) the correspondence of prepartum and postpartum perceptions of childcare. Postpartum depression was defined in terms of a traditional clinical description of depression (Beck, 1967).

Method

Subjects

Seventy-eight primiparous, married couples (N=156, 78 men and 78 women) recruited through private physicians and childbirth preparation classes volunteered to complete questionnaires relating to their pregnancy and postpartum experiences. All subjects were white. The average age among men was 26, for women, 25. Two-thirds of the subjects had some college education and about half of the family incomes were between $10,000 and $20,000. All of the men were employed and approximately half of the women were employed at eight weeks prepartum.

Instruments

Personal and Social History Questionnaire (PSQ). This questionnaire was administered prepartum to collect identifying information on subjects (e.g., name, address, phone number) and to obtain information on individual characteristics which have been found to mediate parent-infant interaction and postpartum adjustment, e.g., parental education and social class. A

follow-up questionnaire was administered postpartum (Postpartum Personal and Social History Questionnaire: (PPSQ) to gather additional information about the infant (e.g., sex, height, weight) and other information on variables relevant to postpartum adjustment of the parents and the infant, e.g., delivery complications, physical illness. To increase understanding of parents' subjective experience of depression both prepartum and postpartum, questions about the degree to which subjects experienced depression and the cause of depression were also included.

Inventory of Caregiving Behavior (ICS). The Inventory was designed for this study to assess through subject self-report the actual amount of time spent by the parent in caregiving activity in an average week. The Inventory asked the parent to estimate the amount of time spent in caretaking behaviors which are frequently required by the infant (e.g., feeding, diaper changing, soothing) for four equal parts of an average weekday, and for four equal parts of an average weekend day (or day the working spouse had off). By having the subject provide multiple estimates of caregiving time, it was hoped to obtain a more accurate estimate of the subject's perception of the amount of time spent in childcare. Prepartum, the Inventory asked subjects to estimate how much time they expected to spend in childcare activity in the newborn period. For both the pre- and postpartum Inventories, an overall summary score ($5 \times \Sigma$ weekday time estimate + $2 \times \Sigma$ weekend time estimate) was employed as representative of a typical seven day week.

Neonatal Perception Inventory (NPI) and Degree of Bother Inventory (DBI). Using the mother's concept of the average baby as an anchor for comparison

of her own infant's behavior, Broussard (Broussard & Hartner, 1971) devised the NPI and the DBI. The behavioral items included in these inventories were selected on the basis of past clinical experience with the concerns young mothers express about their babies. Broussard reported that children of mothers who do not rate them as better than average at one month of age are high-risk for subsequent deviations in emotional development; the mother's perception of her one month old infant as "better than average" indicates that a mother has succeeded in early coping. The NPI and the DBI were administered prepartum, and postpartum as the PNPI and PDBI. Prepartum, subjects were asked how they expected their baby would compare to the average baby and how much they expected their baby's behavior would bother them, while at postpartum, they were asked to compare their baby with the average baby and to what degree their baby's behavior bothered them.

Although Broussard's data analyses were based on categorizing mothers' perceptions of their infants as "better than average," the NPI is scored as a continuous variable. This study utilized the NPI and DBI scores as continuous, thus allowing a higher level analysis of the data.

MR Scale of the Pleasant Events Schedule (PES). The PES is a self-report instrument designed to measure the amount of pleasure being obtained by individuals to approximate measurement of positive reinforcement experienced. The complete Pleasant Events Schedule (MacPhillamy & Lewinsohn, 1971) consists of 320 activities and events items, and calls for two responses to each item: (a) a rating on a three-point scale of frequency for its occurrence during the past 30 days, and (b) a rating on a three-point scale

of subjective enjoyability, whether or not it has been experienced in the past 30 days. Each scale ranges from zero to two in value. In addition to the frequency and enjoyability ratings, a product score (frequency rating times enjoyability rating) is computed for each item.

The PES has been used to generate smaller activity lists of items especially related to mood or other clinical phenomena. In a study examining the relationship between engaging in pleasant activities and daily mood, (Lewinsohn & Graf, 1973), it was reported that 49 of the PES items were significantly correlated with reported mood. Mood was assessed by the Depression Adjective Checklist (Lubin, 1965). Scale "MR" (Mood-related) was defined as the mean value of ratings on these 49 positively keyed items. This scale has been found to correlate highly with other empirically derived scales. In addition, the test-retest reliability coefficient for the MR Scale is within the range of acceptability for "state" variables (test-retest at one month, r = .59; at two months, r = .50).

Therefore, the MR scale of the PES was used in this study to assess the relationship between postpartum depression and the frequency and enjoyability of pleasant events experienced, a measure assumed to approximate the measurement of positive reinforcement. The MR scale of the PES was administered prepartum (PES), and again postpartum as the PPES.

Beck Depression Inventory (BECK). The Beck has been shown to have high reliability and validity as a measure of depression for a variety of populations (Beck, 1967; Burnberry, Oliver, & McClure, 1978; Johnson & Heather, 1974; Metcalfe & Goldman, 1965; Salkind, 1969), including pregnant and postpartum women and their spouses (Rees and Lutkins, 1971). The BECK is

repeatable at intervals as short as one week, and thus is appropriate for a repeated measures design (Beck, 1967). The BECK is designed to yield a numerical measure of depression which enables an examination of a wide range of depression, measured prepartum, and again postpartum as the PBECK.

The BECK consists of four to five descriptive statements for each of 21 categories of attributes defining depression. The statements for each category range from mild or neutral ones to those indicating a severe form of behavior and are scored accordingly. The subject is asked to choose the one statement in each category that fits best at that time. The overall score is the summation of scores on the individual categories.

D_{30} Scale. A second standard measure of depression, the D_{30} Scale (Dempsey, 1964) was added to the postpartum questionnaire as a check on the validity of the BECK in this study. The D_{30} Scale is a short form (30 items) of the MMPI's D Scale (Hathaway & McKinley, 1967) which Dempsey (1964) claimed eliminated the error variation of the original scale. Test-retest reliability estimates in two samples of normal individuals were .88 and .92 (Dempsey, 1964). The D_{30} Scale is interpreted in the same manner as the original MMPI Depression Scale. The D_{30} Scale was chosen for its brevity and because the MMPI's D-Scale correlates highly with the BECK (Beck, 1967, reported correlations as high as .75 between the two measures).

Procedure

The Researcher contacted volunteers by telephone to screen subjects for immediate physical complications of pregnancy, past or current history of psychiatric treatment or cyclical depression. For eligible subjects, appointments were set to sign an informed consent form and to administer

the prepartum questionnaire packet. Subjects completed the questionnaire packets in their homes eight weeks prior to their expected date of delivery. Whenever possible, couples completed the questionnaires at the same time. The format and sequence (as presented in the instrument section) of the measures comprising the prepartum questionnaire packet was the same for all subjects.

To ensure the subjects' understanding of the questionnaires, and to assure high rates of data completion and questionnaire return, the Researcher was present at the prepartum testings. Questionnaire completion required approximately 45 minutes. While couples were asked not to compare answers while working on the questionnaires, the Researcher did not ask them to refrain from discussing the questionnaires later. At the completion of the questionnaire, the subjects were told they would be contacted by the Researcher for postpartum follow-up. Subject recruitment and questionnaire completion took place over a two and one-half month period.

The Researcher kept a record of birth dates of subjects' infants through review of local newspaper announcements. Babies were born over a three month period. Subjects were contacted by phone regarding follow-up approximately eight weeks after the baby was born. Postpartum questionnaire packets were distributed by the Researcher to the subjects' homes and a date for pick-up within two days of questionnaire delivery was scheduled. The format and sequence of prepartum packets were identical for all subjects and were equivalent to the postpartum questionnaire packets with the exception of modifications of item language to reflect the postpartum rather than the prepartum period, and the addition of the B_{30} Scale. An additional

instrument, Beliefs, Attitudes, and Expectancies about Babies Scale (BABES), was administered to the sample pre- and postpartum but is not included in this write-up in order to present the data concisely. Postpartum questionnaire completion took place during a 3-month period.

Results

There was a significant degree of depression in the sample. On self-reports of depression, more women said they had been depressed, and depressed to a greater degree, at some time during the first eight weeks postpartum (90%, n = 70) than said they had been depressed in the right weeks prior to taking the questionnaire prepartum (59%, n = 46). Most of the women reporting depression postpartum said they had been depressed about the change in their life since the baby's arrival, or were non-specific (e.g., "don't know," "nothing in particular," "everything") about the cause of their depression.

Utilizing cutting scores suggested by Beck (1967), the BECK classified 29% (n = 23) of the women depressed prepartum, and 26% (n = 20) depressed postpartum. Overall, women's scores on the BECK decreased from prepartum to postpartum. However, a Student's *t* test computed on prepartum and postpartum BECK scores for women did not reach significance. Using the same cutting scores, Rees and Lutkins (1971) found a similar percentage of women in their sample to be depressed postpartum (30%). This was significantly more depression than they found in a control group of nulliparous women (10%).

The D_{30} Scale (Dempsey, 1964), which was included postpartum as a concurrent validity check on the postpartum BECK, classified approximately the same number of women depressed postpartum (24%, n = 19) as were classified

depressed by the PBECK scores.

Slightly more men reported that they had been depressed at some time during the first eight weeks postpartum (38%, n = 29) than said they had been depressed in the eight weeks prior to completing the prepartum questionnaire (33%, n = 26). Of the men reporting that they had experienced depression at some time postpartum, most reported feeling depressed about family problems or the change in their lifestyle.

Men's scores on the BECK also decreased from prepartum to postpartum. However, as for women, the Student's t test computed on the prepartum and postpartum BECK scores was not significant. Using Beck's (1967) cutting scores, 13% (n = 10) of the men were depressed postpartum. This finding is also comparable to the 13% rate of depression in new fathers reported by Rees and Lutkins (1967). On the D_{30} Scale, more men scored in the depressed range of the Scale (23% depressed, n = 18) than scored depressed on the PBECK.

As shown in Table 1, BECK scores were significantly positively related prepartum to postpartum for women and men. The correlations between the PBECK and the D_{30} Scale were also highly significant for both men (r = .64) and women (r = .73), indicating satisfactory concurrent validity. Furthermore, multiple regression (MR) equations using the D_{30} Scale criterion variable parallel to those using the PBECK as criterion produced comparable results to the PBECK.

Insert Table 1 about here

Table 2 presents the Means and SD's for men and women on the prepartum and postpartum predictor variables. t tests indicated women expect prepartum and report postpartum that they will spend significantly more time in caring-giving behavior than men. Also, at pre- and postpartum, women experience a greater amount of positive reinforcing events than men.

Insert Table 2 about here

Postpartum Correlates of Postpartum Depression

For both women and men postpartum, there was a significant association between depression and the amount of positive reinforcement experienced. There was also a significant correlation between depression for men and women and how much their baby's behavior bothered them. Postpartum depression correlated significantly with the amount of time spent in caretaking behaviors for both men and women. For men, depression postpartum correlated significantly with the degree to which they did not rate their baby as better than average (see Table 1).

Prepartum Correlates of Postpartum Depression

Expectations of the amount of time spent in caregiving behaviors was significantly related to postpartum depression in women. Those women who anticipated prepartum that they would be spending a lot of time in child-care tended to be more depressed postpartum. Prepartum depression was significantly related to postpartum depression for both men and women (Table 1).

Prepartum Correlates of Prepartum Depression

Women who expected that they would be spending a great deal of time

in caregiving activity with their child tended to be significantly more depressed prepartum. Prepartum, there was also a significant correlation between depression and the amount of positive reinforcement experienced. Men who were depressed prepartum also reported low levels of positive reinforcement experienced. The greater the degree to which men expected their infant's behavior to bother them, the more they experienced prepartum depression (Table 1).

Postpartum Correlates of Prepartum Depression

Prepartum depression was significantly related to postpartum reports of the amount of time spent in caretaking behaviors, the degree to which their baby bothered them, and the amount of positive reinforcement experienced for women. Prepartum depression for men significantly related to the degree to which they reported postpartum that their baby bothered them (Table 1).

Multiple Regression of Postpartum Depression

The strength of the relationship between pre- and postpartum BECK scores raises the question as to the ability of other variables to predict postpartum depression when prepartum depression is included as a predictor. Multiple regression was performed using the pre- and postpartum variables along with prepartum depression as predictors of postpartum depression. As can be seen in Table 3, for women the postpartum measure of PES continued to make a significant contribution to explain postpartum depression when included in a regression model containing prepartum BECK scores. It is also interesting that prepartum PES may actually have a suppressor effect for prepartum BECK and postpartum PES. The beta weights for these

latter two variables both increase when PES is included in the model (from .461 to .509 for the BECK and from -.247 to -.339 for the PPES).

Insert Table 3 about here

Table 3 shows the results of multiple regression in which postpartum depression was predicted for men from prepartum and postpartum variables. Postpartum BECK scores were most strongly associated with prepartum BECK scores and pre- and postpartum NPI. The relationships between the NPI and the PBECK, and the PNPI and the PBECK are in opposite directions. Men who to a greater degree expected their babies to be better than average prepartum, and then viewed their baby to a lesser degree to be better than average postpartum, tended to experience a greater degree of depression postpartum.

A significant contribution was also made by prepartum PES and a marginally significant contribution was made by postpartum PES. Prepartum and postpartum PES scores had a suppressor relationship similar to that observed in the MR analyses for women. Hence, the prepartum and postpartum beta weights were increased (for the pre- from .176 to .228 and for the post- from-.076 to -.152) adding to the magnitude of the multiple correlation.

In an attempt to clarify the relationships between the prepartum and postpartum predictors and the postpartum BECK, difference scores for the prepartum to postpartum predictor variables, and for the prepartum to postpartum criterion, were computed and used in separate MR analyses for women and men, as can be seen in Tables 4,5. The equations did not produce a

significant R for women. However, the DPES score accounted for a significant amount of the explained variance in the criterion, indicating that for women, a decrease in positive reinforcement prepartum to postpartum was associated with an increase in depression scores from prepartum to postpartum and with postpartum depression.

For men significant R's were obtained. The DNPI and DPES scores accounted for a significant amount of the explained variance in the criterion, indicating that a decrease in the degree to which men saw their babies as "better than the average baby" and a decrease in positive reinforcement prepartum to postpartum were associated with an increase in BECK scores from prepartum to postpartum and with postpartum depression.

Insert Tables 4,5 about here

Discussion

Most of the previous research on postpartum depression has not employed a comprehensive theory to determine the selection of independent and dependent variables and hypotheses to be tested. Thus, researchers from varied backgrounds have reported findings which are often contradictory and difficult to generalize across studies. In an attempt to remedy the research fragmentation, this study was developed in accord with two complementary theories: the social stress theory of postpartum depression, and the behavioral theory of depression. This approach was successful in producing a set of integrated findings about postpartum depression and the pre- and postpartum period for primiparous women and men.

Questionnaires administered prepartum and postpartum to couples expecting their first child assessed prepartum expectations of childcare and depression level in relation to the postpartum experience of childcare and postpartum depression. This study employed a relatively large sample compared to most studies of postpartum adjustment. It was also one of the few studies to assess uniformly both parents of the same infant. The questionnaire results indicated that subjects who were depressed prepartum tended to be depressed postpartum. Independent of the prepartum depression score, however, postpartum depression was related to the disruption experienced by the parent due to the infant's caretaking demands.

For women, postpartum depression was most strongly related to reported lower rates of positive reinforcement, controlling for prepartum depression. In addition, postpartum depression for women was significantly related to greater amounts of time spent in childcare and a greater degree of bother from the infant's behaviors. Also, mothers who reported decreased positive reinforcement prepartum to postpartum were likely to have higher postpartum depression scores, and/or to experience an increase in depression prepartum to postpartum. Hence, the picture emerged of the woman who experienced the greatest degree of depression postpartum as a mother who experienced a low rate of positive reinforcement, spent a great deal of time in childcare, and felt bothered by her infant's behavior.

For men, when the level of prepartum depression was controlled, postpartum depression was most strongly related to viewing the infant's behavior less positively. In addition, postpartum depression for men was significantly related to reporting lower rates of positive reinforcement, reporting

a greater degree of bother from the infant's activities and more time spent in childcare. Also for men, a change from relatively positive expectations about the infant prepartum to a less positive view postpartum and a decrease in the rate of reinforcement prepartum to postpartum were related to higher depression scores postpartum and to an increase in depression from prepartum to postpartum. Hence, in this study, the picture of the man who had the greatest likelihood of experiencing depression postpartum was of a father who viewed his infant less positively, experienced a decrease in the rate of positive reinforcement pre- to postpartum, was bothered by his infant's behaviors and spent a greater amount of time in childcare.

Although the combination of variables most strongly associated with postpartum depression are slightly different for women and men, together they strongly support the hypothesis derived from the social stress and behavioral theories of depression: that postpartum depression is related to the amount of disruption experienced by the parents due to infant caretaking demands.

It is the women whose lives are most drastically altered by the experiences of pregnancy, childbirth and infant care. For women, a low rate of reinforcement measured by the PES (assessing the frequency and value of pleasant activities) is the strongest predictor of postpartum depression. New mothers often report that their depression is related to the loss of prepregnancy and prechildbirth activities. Isolation from prepregnancy supports is frequently cited as a major factor in postpartum depression. In addition, two findings suggest that the more depressed mothers were not being adequately reinforced by their primary activity--infant care. They

are the positive correlation between childcare time and postpartum depression, and the positive correlation between postpartum depression and the amount of bother at infant's activities.

For fathers, the strongest predictor of postpartum depression was a less positive perception of their infant as compared to the "average baby." Broussard and Hartner (1971) suggest this measure is, for mothers, an index of how well the parent has succeeded in coping with the caretaking tasks of the newborn period. If this measure suggests the same reaction for fathers, their postpartum depression may reflect difficulties in establishing a relationship with their newborn and reaping rewards from that relationship. The significant correlation between reported degree of bother and fathers' postpartum depression supports this interpretation.

Perhaps because fathers ordinarily spend much less time in child caretaking, and usually suffer less disruption of their positive reinforcement, as compared to women, they are somewhat more insulated from depression associated with the postpartum adjustment. Although childcare time and postpartum positive reinforcement were also correlated to postpartum depression for fathers, the relationship for fathers was of a lesser magnitude than for mothers. This study's data suggest that a better predictor of postpartum depression for men may be a disturbed father-infant relationship. However, difficulty in the father-infant relationship is likely to result in lower reinforcement from that relationship for the father.

It is important to note that a decrease in the reported rate of reinforcement prepartum to postpartum was significantly related to postpartum depression and/or an increase in depression pre- to postpartum for

mothers and fathers. Consistent with Lewinsohn's (1974) behavioral theory of depression, it is the drop in the rate of reinforcement pre- to postpartum which is related to postpartum depression for both women and men.

The results of this study suggest that postpartum adjustment for women and men is related to reinforcements experienced within and outside of the child care situation. Because mothers and fathers have different roles vis-a-vis the newborn, the pattern of reinforcements related to depression may differ. For women, a general loss of reinforcer frequency and effectiveness appears to predominate, while for men, failure to feel reinforced by their newborn appears primary.

This study's findings suggest that the relationship between reinforcement within and outside of the childcare situation warrants further study. Previous studies of postpartum adaption have tended to focus on one or the other (i.e., stresses external to the parent-infant relationship or indices of disturbance within the relationship). This study's findings suggest it is important to look at the influence of both sources of reinforcement.

Future research needs to extend the findings reported here by attempting: (a) to define specifically which kinds of reinforcements are most important to the parent in facilitating postpartum adjustment and how specific reinforcements differ for women and men; (b) to determine how reinforcements within the caretaking relationships may be related to reinforcements outside of the relationship--does reinforcement in one area facilitate the occurrence in another; (c) to determine whether a drop in positive reinforcement precedes depression or whether depression precedes the low rate of positive reinforcement; and (d) to determine whether the perception of reinforcement or the actual occurrence of reinforcement

is most critical to postpartum adjustment.

In addition, modifications and extensions of this study's design would increase understanding of the relationship between postpartum depression and childcare demands. Because of the rather homogeneous characteristics of this sample, the results of this study must be replicated on samples with other characteristics before results can be generalized to expectant parents of different backgrounds. The results of this study indicate that large samples of subjects are essential if the various levels of depression which occur postpartum are to be discriminated. Optimally, in research on postpartum depression, a series of measures should be taken over the pregnancy and postpartum period. Without multiple measures, it is impossible to determine when expectant parents begin to experience increasing amounts of depression and what the course of the depression is. Although the parents' perceptions of the infant were assessed, direct observations of infant behavior were not made. Researchers have noted that certain infant characteristics may make them less effective communicators or "reinforcers" of their parents' behaviors. A complete assessment of parental adaption would include measures of mother, father, and infant behaviors and their interactions.

Research on postpartum depression needs to be designed not only to identify the variables precipitant to depression, but to identify different reactions to those variables and different ways of coping. To aid efforts in prevention, research needs to identify protective and causative factors in postpartum depression, determining optimal conditions for parenthood and identifying high risk conditions.

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Table 1

Intercorrelations among Prepartum and Postpartum Variables for Women and Men

Prepartum	Women		Men	
	Pre Beck	Post Beck	Pre Beck	Post Beck
Inventory of Caretaking Behavior	.23*	.22*	-.02	.09
Neonatal Perception Inventory	.11	.10	-.05	.16
Degree of Bother	.08	.05	.25**	.14
Pleasant Events Schedule	-.26**	-.10	-.18*	.08
Pre Beck		.56***		.59***
Postpartum				
Inventory of Caretaking Behavior	.23*	.24*	.04	.19*
Neonatal Perception Inventory	.01	-.05	-.01	-.30**
Degree of Bother	.24*	.20*	.26**	.28**
Pleasant Events Schedule	-.22*	-.38***	-.17	.23*

* $p < .05$

** $p < .01$

*** $p < .001$

Table 2

Means and Standard Deviations of Prepartum and Postpartum Predictor Variables, by Sex

	Women (N=78)		Men (N=78)		
Variable	$\bar{x}$	S.D.	$\bar{x}$	S.D.	t
ICB	61.52	26.14	29.88	24.80	7.705**
NPI	.95	1.51	.86	1.80	.336
DBI	14.40	2.86	14.53	2.95	.278
PES	2.55	.45	2.37	.55	2.223*
PICB	54.52	22.01	20.29	14.55	11.384**
PNPI	2.55	2.92	2.15	2.59	.899
PDBI	12.05	3.01	11.88	3.32	.333
PPES	2.65	.50	2.45	.61	2.225*

* $p < .05$

** $p < .001$

Table 3

Multiple Regression of Prepartum and Postpartum Predictor Variables to Postpartum BECK, for Women and Men

	Women			Men		
	Full Equation Multiple r	r^2	F	Full Equation Multiple r	r^2	F
	.669	.447	3.466**	.747	.558	5.598***
Variable	r	Beta	F	r	Beta	F
BECK	.564	.509	19.736**	.588	.593	38.976***
PICB	.238	.058	.241	.192	.051	.213
PNPI	-.046	-.053	.209	-.298	-.238	7.016**
PDBI	.205	-.030	.059	.281	.071	.350
PPES	-.377	-.339	7.007**	-.225	-.152	2.616
ICB	.225	.068	.335	.092	.033	.094
NPI	.096	.001	.000	.158	.197	4.317*
DBI	.049	.011	.011	.142	-.005	.002
PES	-.096	.210	2.876	.084	.228	5.256**

* $p < .05$

** $p < .01$

*** $p < .001$

Table 4

Multiple Regression of Difference Scores (prepartum to postpartum)

for Predictor Variables to BECK Difference Scores,

for Women and Men

	Women			Men		
	Full Equation Multiple r	r^2	F	Full Equation Multiple r	r^2	F
	.383	.146	1.944	.462	.214	3.216**
Variable	r	Beta	F	r	Beta	F
DICB	.018	.027	.056	-.032	-.022	.044
DNPI	-.034	-.094	.543	-.416	-.382	10.527**
DDBI	-.013	-.138	1.107	.126	.023	.040
DPES	-.331	-.342	7.655*	-.263	-.202	3.547*

* $p < .05$

** $p < .01$

Table 4

Multiple Regression of Difference Scores (prepartum to postpartum)

for Predictor Variables to Postpartum BECK,

for Women and Men

	Women			Men		
	Full Equation Multiple r	r^2	F	Full Equation Multiple r	r^2	F
	.313	.098	1.229	.453	.205	3.053**
Variable	r	Beta	F	r	Beta	F
DICB	-.026	-.035	.089	.021	.024	.050
DNPI	-.083	-.060	.212	-.366	-.267	5.078*
DDBI	.124	.060	.197	.147	.033	.080
DPES	-.295	-.280	4.858	-.283	-.229	4.509*

* $p < .05$

** $p < .01$